

Property of  
Lake and River Enhancement Section  
Division of Fish and Wildlife/IDNR  
402 W. Washington Street, W-273  
Indianapolis, IN 46204

CONTRACT DOCUMENTS  
FOR  
PETERSON DITCH  
STREAMBANK STABILIZATION  
DESIGN PROJECT

Project No. 94-07-168

Kosciusko County, Indiana

Prepared for:

WINONA LAKE PRESERVATION ASSOCIATION  
BOX 13  
WARSAW, INDIANA 46580

Prepared by:

DONAN ENGINEERING CO., INC.  
4342 N Hwy. 231  
Jasper, Indiana 47546

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## TABLE OF CONTENTS

<u>ITEM</u>	<u>PAGE</u>
ADVERTISEMENT FOR BIDS .....	AB-1
INFORMATION TO BIDDERS .....	IB-1
BID.....	B-1
BID BOND.....	BB-1
AGREEMENT.....	A-1
GENERAL CONDITIONS .....	GC-1
SUPPLEMENTAL GENERAL CONDITIONS .....	S-1
PAYMENT BOND.....	PAB-1
PERFORMANCE BOND .....	PEB-1
NOTICE OF AWARD .....	NA-1
NOTICE TO PROCEED .....	NP-1
CHANGE ORDER .....	CO-1
DRAWINGS	
TECHNICAL SPECIFICATIONS .....	TS-1

ADVERTISEMENT FOR BIDS

Winona Lake Preservation Association

Box 13

Owner

Address

Warsaw, IN 46580

Separate sealed BIDS for the construction of (briefly describe nature, scope, and major elements of the work) streambank stabilization measures for  
Peterson Ditch.

will be received by Winona Lake Preservation Association  
at the office of \_\_\_\_\_  
until \_\_\_\_\_, (Standard Time—Daylight Savings Time) \_\_\_\_\_,  
19\_\_\_\_\_, and then at said office publicly opened and read aloud.

The CONTRACT DOCUMENTS may be examined at the following locations:

Copies of the CONTRACT DOCUMENTS may be obtained at the office of \_\_\_\_\_  
located at \_\_\_\_\_  
upon payment of \$\_\_\_\_\_ for each set.

Any BIDDER, upon returning the CONTRACT DOCUMENTS promptly and in good condition, will be refunded his payment, and any non-bidder upon so returning the CONTRACT DOCUMENTS will be refunded \$\_\_\_\_\_.

\_\_\_\_\_  
Date

## INFORMATION FOR BIDDERS

BIDS will be received by Winona Lake Preservation Association  
(herein called the "OWNER"), at \_\_\_\_\_  
until \_\_\_\_\_, 19\_\_\_\_\_, and then at said office publicly opened and read  
aloud.

Each BID must be submitted in a sealed envelope, addressed to \_\_\_\_\_  
\_\_\_\_\_ at \_\_\_\_\_.  
Each sealed envelope containing a BID must be plainly marked on the outside as BID  
for \_\_\_\_\_ and the  
envelope should bear on the outside the name of the BIDDER, his address, his license  
number if applicable and the name of the project for which the BID is submitted. If  
forwarded by mail, the sealed envelope containing the BID must be enclosed in another  
envelope addressed to the OWNER at \_\_\_\_\_.

All BIDS must be made on the required BID form. All blank spaces for BID prices  
must be filled in, in ink or typewritten, and the BID form must be fully completed and  
executed when submitted. Only one copy of the BID form is required.

The OWNER may waive any informalities or minor defects or reject any and all  
BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening  
of BIDS or authorized postponement thereof. Any BID received after the time and date  
specified shall not be considered. No BIDDER may withdraw a BID within 60 days after  
the actual date of the opening thereof. Should there be reasons why the contract cannot  
be awarded within the specified period, the time may be extended by mutual agree-  
ment between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in  
the BID Schedule by examination of the site and a review of the drawings and specifica-  
tions including ADDENDA. After BIDS have been submitted, the BIDDER shall not as-  
sert that there was a misunderstanding concerning the quantities of WORK or of the  
nature of the WORK to be done.

The OWNER shall provide to BIDDERS prior to BIDDING, all information which is  
pertinent to, and delineates and describes, the land owned and rights-of-way acquired  
or to be acquired.

The CONTRACT DOCUMENTS contain the provisions required for the construc-  
tion of the PROJECT. Information obtained from an officer, agent, or employee of the  
OWNER or any other person shall not affect the risks or obligations assumed by the  
CONTRACTOR or relieve him from fulfilling any of the conditions of the contract.

Each BID must be accompanied by a BID bond payable to the OWNER for five  
percent of the total amount of the BID. As soon as the BID prices have been compared,  
the OWNER will return the BONDS of all except the three lowest responsible BIDDERS.  
When the Agreement is executed the bonds of the two remaining unsuccessful BID-  
DERS will be returned. The BID BOND of the successful BIDDER will be retained until  
the payment BOND and performance BOND have been executed and approved, after  
which it will be returned. A certified check may be used in lieu of a BID BOND.

A performance BOND and a payment BOND, each in the amount of 100 percent of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.

Attorneys-in-fact who sign BID BONDS or payment BONDS and performance BONDS must file with each BOND a certified and effective dated copy of their power of attorney.

The party to whom the contract is awarded will be required to execute the Agreement and obtain the performance BOND and payment BOND within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary Agreement and BOND forms. In case of failure of the BIDDER to execute the Agreement, the OWNER may at his option consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

The OWNER within ten (10) days of receipt of acceptable performance BOND, payment BOND and Agreement signed by the party to whom the Agreement was awarded shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may by WRITTEN NOTICE withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The NOTICE TO PROCEED shall be issued within ten (10) days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

The OWNER may make such investigations as he deems necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the WORK contemplated therein.

A conditional or qualified BID will not be accepted.

Award will be made to the lowest responsible BIDDER.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to his BID.

Further, the BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause set forth in the SUPPLEMENTAL GENERAL CONDITIONS.

The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when requested to do so by the OWNER.

Inspection trips for prospective BIDDERS will leave from the office of the

at \_\_\_\_\_

The ENGINEER is Donan Engineering Co., Inc. His address

is 4342 North U.S. 231, Jasper, IN 47546

**BID**

Proposal of \_\_\_\_\_ (hereinafter called "BIDDER"), organized and existing under the laws of the State of \_\_\_\_\_ doing business as \_\_\_\_\_\*.

To the \_\_\_\_\_  
\_\_\_\_\_ (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the construction of Peterson Ditch Streambank  
Stabilization Project.

in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to his own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT within \_\_\_\_\_ consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of \$\_\_\_\_\_ for each consecutive calendar day thereafter as provided in Section 15 of the General Conditions.

BIDDER acknowledges receipt of the following ADDENDUM:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*Insert "a corporation", "a partnership", or "an individual" as applicable.

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum:

### BID SCHEDULE

NOTE: BIDS shall include sales tax and all other applicable taxes and fees.

NO.	ITEM	UNIT	UNIT PRICE	AMOUNT	TOTAL PRICE
1.	Mobilization/ Demobilization	Lump Sum		1	
2.	Live Stake Installation	Lft.		95	
3.	Post Revetment with Wire Fencing	Lft.		1090	
4.	Rip-rap slope	Lft.		440	
5.	Rip-rap geocell slope	Lft.		580	
6.	Vegetated rock gabion	Lft.		60	
7.	Live cribwall	Lft.		120	
8.	Mulched seeding	Sfs		4816	

NO.	ITEM	UNIT	UNIT PRICE	AMOUNT	TOTAL PRICE
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TOTAL OF BID ..... \$ \_\_\_\_\_  
LUMP SUM PRICE (if applicable) ..... \$ \_\_\_\_\_

Respectfully submitted:

_____ Signature	_____ Address
_____ Title	_____ Date
_____ License Number (if applicable)	_____

(SEAL—if BID is by a corporation)

Attest \_\_\_\_\_



## BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, \_\_\_\_\_  
\_\_\_\_\_ as Principal, and  
\_\_\_\_\_ as Surety, are hereby  
held and firmly bound unto \_\_\_\_\_ as OWNER  
in the penal sum of \_\_\_\_\_  
for the payment of which, well and truly to be made, we hereby jointly and severally  
bind ourselves, successors and assigns.

Signed, this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_.

The Condition of the above obligation is such that whereas the Principal has submitted  
to \_\_\_\_\_ a certain BID,  
attached hereto and hereby made a part hereof to enter into a contract in writing, for the  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

~~then~~ then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

\_\_\_\_\_  
Principal (L.S.)

\_\_\_\_\_  
Surety

By: \_\_\_\_\_

IMPORTANT—Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

## AGREEMENT

THIS AGREEMENT, made this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_, by  
and between \_\_\_\_\_, hereinafter called "OWNER"  
(Name of Owner), (an Individual)

and \_\_\_\_\_ doing business as (an individual,) or (a  
partnership,) or (a corporation) hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements herein-  
after mentioned:

1. The CONTRACTOR will commence and complete the construction of
- 

2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment,  
labor and other services necessary for the construction and completion of the PROJECT  
described herein.

3. The CONTRACTOR will commence the work required by the CONTRACT DOC-  
UMENTS within \_\_\_\_\_ calendar days after the date of the NOTICE TO PRO-  
CEED and will complete the same within \_\_\_\_\_ calendar days unless the period  
for completion is extended otherwise by the CONTRACT DOCUMENTS.

4. The CONTRACTOR agrees to perform all of the WORK described in the CON-  
TRACT DOCUMENTS and comply with the terms therein for the sum of \$ \_\_\_\_\_,  
or as shown in the BID schedule.

5. The term "CONTRACT DOCUMENTS" means and includes the following:

- (A) Advertisement For BIDS
- (B) Information For BIDDERS
- (C) BID
- (D) BID BOND
- (E) Agreement

(F) General Conditions

(G) SUPPLEMENTAL GENERAL CONDITIONS

(H) Payment BOND

(I) Performance BOND

(J) NOTICE OF AWARD

(K) NOTICE TO PROCEED

(L) CHANGE ORDER

(M) DRAWINGS prepared by \_\_\_\_\_  
numbered \_\_\_\_\_ through \_\_\_\_\_, and dated \_\_\_\_\_,  
19 \_\_\_\_\_

(N) SPECIFICATIONS prepared or issued by \_\_\_\_\_  
\_\_\_\_\_  
dated \_\_\_\_\_, 19 \_\_\_\_\_

(O) ADDENDA:

No. \_\_\_\_\_, dated \_\_\_\_\_, 19 \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_, 19 \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_, 19 \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_, 19 \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_, 19 \_\_\_\_\_

No. \_\_\_\_\_, dated \_\_\_\_\_, 19 \_\_\_\_\_

6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the CONTRACT DOCUMENTS.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in (\_\_\_\_\_) each of which shall be deemed an original on the date first above written.  
(Number of Copies)

OWNER:

\_\_\_\_\_  
BY \_\_\_\_\_

Name \_\_\_\_\_  
(Please Type)

Title \_\_\_\_\_

(SEAL)

ATTEST:

\_\_\_\_\_

Name \_\_\_\_\_  
(Please Type)

Title \_\_\_\_\_

CONTRACTOR:

\_\_\_\_\_

BY \_\_\_\_\_

Name \_\_\_\_\_  
(Please Type)

Address \_\_\_\_\_

\_\_\_\_\_

(SEAL)

ATTEST:

\_\_\_\_\_

Name \_\_\_\_\_  
(Please Type)

\_\_\_\_\_

## GENERAL CONDITIONS

1. Definitions
2. Additional Instructions and Detail Drawings
3. Schedules, Reports and Records
4. Drawings and Specifications
5. Shop Drawings
6. Materials, Services and Facilities
7. Inspection and Testing
8. Substitutions
9. Patents
10. Surveys, Permits, Regulations
11. Protection of Work, Property, Persons
12. Supervision by Contractor
13. Changes in the Work
14. Changes in Contract Price
15. Time for Completion and Liquidated Damages
16. Correction of Work
17. Subsurface Conditions
18. Suspension of Work, Termination and Delay
19. Payments to Contractor
20. Acceptance of Final Payment as Release
21. Insurance
22. Contract Security
23. Assignments
24. Indemnification
25. Separate Contracts
26. Subcontracting
27. Engineer's Authority
28. Land and Rights-of-Way
29. Guaranty
30. Arbitration
31. Taxes

### 1. DEFINITIONS

1.1 Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

1.2 ADDENDA—Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATIONS, by additions, deletions, clarifications or corrections.

1.3 BID—The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.

1.4 BIDDER—Any person, firm or corporation submitting a BID for the WORK.

1.5 BONDS—Bid, Performance, and Payment Bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the CONTRACT DOCUMENTS.

1.6 CHANGE ORDER—A written order to the CONTRACTOR authorizing an addition, deletion or revision in the WORK within the general scope of the CONTRACT DOCUMENTS, or authorizing an adjustment in the CONTRACT PRICE or CONTRACT TIME.

1.7 CONTRACT DOCUMENTS—The contract, including Advertisement For Bids, Information For Bidders, BID, Bid Bond, Agreement, Payment Bond, Performance Bond, NOTICE OF AWARD, NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS, and ADDENDA.

1.8 CONTRACT PRICE—The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.

1.9 CONTRACT TIME—The number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK.

1.10 CONTRACTOR—The person, firm or corporation with whom the OWNER has executed the Agreement.

1.11 DRAWINGS—The part of the CONTRACT DOCUMENTS which show the characteristics and scope of the WORK to be performed and which have been prepared or approved by the ENGINEER.

1.12 ENGINEER—The person, firm or corporation named as such in the CONTRACT DOCUMENTS.

1.13 FIELD ORDER—A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction.

1.14 NOTICE OF AWARD—The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.

1.15 NOTICE TO PROCEED—Written communication issued by the OWNER to the CONTRACTOR authorizing him to proceed with the WORK and establishing the date of commencement of the WORK.

1.16 OWNER—A public or quasi-public body or authority, corporation, association, partnership, or individual for whom the WORK is to be performed.

1.17 PROJECT—The undertaking to be performed as provided in the CONTRACT DOCUMENTS.

1.18 RESIDENT PROJECT REPRESENTATIVE—The authorized representative of the OWNER who is assigned to the PROJECT site or any part thereof.

1.19 SHOP DRAWINGS—All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a SUBCONTRACTOR, manufacturer, SUPPLIER or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.

1.20 SPECIFICATIONS—A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

1.21 SUBCONTRACTOR—An individual, firm or corporation having a direct contract with the CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site.

1.22 SUBSTANTIAL COMPLETION—That date as certified by the ENGINEER when the construction of the PROJECT or a specified part thereof is sufficiently completed, in accordance with the CONTRACT DOCUMENTS, so that the PROJECT or specified part can be utilized for the purposes for which it is intended.

1.23 SUPPLEMENTAL GENERAL CONDITIONS—

Modifications to General Conditions required by a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such requirements that may be imposed by applicable state laws.

1.24 **SUPPLIER**—Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site.

1.25 **WORK**—All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT.

1.26 **WRITTEN NOTICE**—Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the WORK.

## **2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS**

2.1 The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS.

2.2 The additional drawings and instruction thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

## **3. SCHEDULES, REPORTS AND RECORDS**

3.1 The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.

3.2 Prior to the first partial payment estimate the CONTRACTOR shall submit construction progress schedules showing the order in which he proposes to carry on the WORK, including dates at which he will start the various parts of the WORK, estimated date of completion of each part and, as applicable:

3.2.1 The dates at which special detail drawings will be required; and

3.2.2 Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

3.3 The CONTRACTOR shall also submit a schedule of payments that he anticipates he will earn during the course of the WORK.

## **4. DRAWINGS AND SPECIFICATIONS**

4.1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

4.2 In case of conflict between the DRAWINGS and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over scale dimensions, and detailed DRAWINGS shall govern over general DRAWINGS.

4.3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR'S risk.

## **5. SHOP DRAWINGS**

5.1 The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER'S approval of any SHOP DRAWING shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of any SHOP DRAWING which substantially deviates from the requirement of the CONTRACT DOCUMENTS shall be evidenced by a CHANGE ORDER.

5.2 When submitted for the ENGINEER'S review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification that he has reviewed, checked and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.

5.3 Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

## **6. MATERIALS, SERVICES AND FACILITIES**

6.1 It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the WORK within the specified time.

6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

6.3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

6.4 Materials, supplies and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

6.5 Materials, supplies or equipment to be incorporated into the WORK shall not be purchased by the

CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

## 7. INSPECTION AND TESTING

7.1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

7.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

7.3 The CONTRACTOR shall provide at his expense the testing and inspection services required by the CONTRACT DOCUMENTS.

7.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

7.5 Inspections, tests or approvals by the engineer or others shall not relieve the CONTRACTOR from his obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

7.6 The ENGINEER and his representatives will at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal or state agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.

7.7 If any WORK is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for his observation and replaced at the CONTRACTOR'S expense.

7.8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

## 8. SUBSTITUTIONS

8.1 Whenever a material, article or piece of equip-

ment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

## 9. PATENTS

9.1 The CONTRACTOR shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the OWNER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified, however if the CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the ENGINEER.

## 10. SURVEYS, PERMITS, REGULATIONS

10.1 The OWNER shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the WORK together with a suitable number of bench marks adjacent to the WORK as shown in the CONTRACT DOCUMENTS. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets.

10.2 The CONTRACTOR shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

10.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the WORK as drawn and specified. If the CONTRACTOR



observes that the CONTRACT DOCUMENTS are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section 13, CHANGES IN THE WORK.

#### 11. PROTECTION OF WORK, PROPERTY AND PERSONS

11.1 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

11.2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER or the ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

11.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury or loss. He will give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be issued covering the changes and deviations involved.

#### 12. SUPERVISION BY CONTRACTOR

12.1 The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

#### 13. CHANGES IN THE WORK

13.1 The OWNER may at any time, as the need arises,

order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

13.2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles him to a change in CONTRACT PRICE or TIME, or both, in which event he shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30) days. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

#### 14. CHANGES IN CONTRACT PRICE

14.1 The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below:

(a) Unit prices previously approved.

(b) An agreed lump sum.

(c) The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work. In addition there shall be added an amount to be agreed upon but not to exceed fifteen (15) percent of the actual cost of the WORK to cover the cost of general overhead and profit.

#### 15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

15.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.

15.2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

15.3 If the CONTRACTOR shall fail to complete the WORK within the CONTRACT TIME, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the OWNER the amount for liquidated damages as specified in the BID for each calendar day that the CONTRACTOR shall be in default after the time stipulated in the CONTRACT DOCUMENTS.

15.4 The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the WORK is due to the following, and the CONTRACTOR has promptly given WRITTEN NOTICE of such delay to the OWNER or ENGINEER.

15.4.1 To any preference, priority or allocation

order duly issued by the OWNER.

15.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and

15.4.3 To any delays of SUBCONTRACTORS occasioned by any of the causes specified in paragraphs 15.4.1 and 15.4.2 of this article.

#### 16. CORRECTION OF WORK

16.1 The CONTRACTOR shall promptly remove from the premises all WORK rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.

16.2 All removal and replacement WORK shall be done at the CONTRACTOR'S expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

#### 17. SUBSURFACE CONDITIONS

17.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the CONTRACT DOCUMENTS; or

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

17.2 The OWNER shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK, an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the OWNER may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

#### 18. SUSPENSION OF WORK, TERMINATION AND DELAY

18.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the CONTRACTOR, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which notice shall fix the date on which WORK shall be resumed. The CONTRACTOR

will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension.

18.2 If the CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the WORK or if he disregards the authority of the ENGINEER, or if he otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety a minimum of ten (10) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method he may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.

18.3 Where the CONTRACTOR'S services have been so terminated by the OWNER, said termination shall not affect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.

18.4 After ten (10) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the PROJECT and terminate the Contract. In such case, the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.

18.5 If, through no act or fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public authority, or the ENGINEER fails to act on any request for payment within thirty (30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (10) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER, terminate the CONTRACT and recover from the OWNER payment for all WORK exe-

cuted and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days written notice to the OWNER and the ENGINEER stop the WORK until he has been paid all amounts then due, in which event and upon resumption of the WORK, CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

18.6 If the performance of all or any portion of the WORK is suspended, delayed, or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

#### 19. PAYMENTS TO CONTRACTOR

19.1 At least ten (10) days before each progress payment falls due (but not more often than once a month), the CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER, as will establish the OWNER's title to the material and equipment and protect his interest therein, including applicable insurance. The ENGINEER will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing his reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within ten (10) days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate. The OWNER shall retain ten (10) percent of the amount of each payment until final completion and acceptance of all work covered by the CONTRACT DOCUMENTS. The OWNER at any time, however, after fifty (50) percent of the WORK has been completed, if he finds that satisfactory progress is being made, shall reduce retainage to five (5) percent on the current and remaining estimates. When the WORK is substantially complete (operational or beneficial occupancy), the retained amount may be further reduced below five (5) percent to only that amount necessary to assure completion. On completion and acceptance of a part of the WORK on which the price is stated separately in the CONTRACT DOCUMENTS, payment may be made in full, including retained percentages, less authorized deductions.

19.2 The request for payment may also include an allowance for the cost of such major materials and

equipment which are suitably stored either at or near the site.

19.3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

19.4 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

19.5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted by him under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.

19.6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of SUBCONTRACTORS, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed, in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, his Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

19.7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

## 20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

20.1 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the CONTRACT DOCUMENTS or the Performance BOND and Payment BONDS.

## 21. INSURANCE

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, disability benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

21.2 Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled unless at least fifteen (15) days prior WRITTEN NOTICE has been given to the OWNER.

21.3 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as hereinafter specified:

21.3.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any

operations under the CONTRACT DOCUMENTS, whether such operations be by himself or by any SUBCONTRACTOR under him, or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR under him. Insurance shall be written with a limit of liability of not less than \$500,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than \$500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$200,000 aggregate for any such damage sustained by two or more persons in any one accident.

21.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

21.4 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the PROJECT and in case any work is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

21.5 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for WORK to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, the ENGINEER, and the OWNER.

## 22. CONTRACT SECURITY

22.1 The CONTRACTOR shall within ten (10) days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance Bond and a Payment Bond in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by

the CONTRACTOR of all undertakings, covenants, terms, conditions and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal BONDS, CONTRACTOR shall within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

## 23. ASSIGNMENTS

23.1 Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

## 24. INDEMNIFICATION

24.1 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

24.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.

24.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, DRAWINGS, opinions, reports, surveys, CHANGE ORDERS, designs or SPECIFICATIONS.

## 25. SEPARATE CONTRACTS

25.1 The OWNER reserves the right to let other con-

tracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK, and shall properly connect and coordinate his WORK with theirs. If the proper execution or results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

25.2 The OWNER may perform additional WORK related to the PROJECT by himself, or he may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if he is performing the additional WORK himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.

25.3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves him in additional expense or entitles him to an extension of the CONTRACT TIME, he may make a claim therefor as provided in Sections 14 and 15.

## 26. SUBCONTRACTING

26.1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.

26.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(s), in excess of fifty (50%) percent of the CONTRACT PRICE, without prior written approval of the OWNER.

26.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of his SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

26.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.

26.5 Nothing contained in this CONTRACT shall create any contractual relation between any SUBCONTRACTOR and the OWNER.

## 27. ENGINEER'S AUTHORITY

27.1 The ENGINEER shall act as the OWNER'S representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and WORK performed. He shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The

ENGINEER will make visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

27.2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship and execution of the WORK. Inspections may be made at the factory or fabrication plant of the source of material supply.

27.3 The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

27.4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

#### 28. LAND AND RIGHTS-OF-WAY

28.1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

28.2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the lands owned and rights-of-way acquired.

28.3 The CONTRACTOR shall provide at his own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

#### 29. GUARANTY

29.1 The CONTRACTOR shall guarantee all materials and equipment furnished and WORK performed for a period of one (1) year from the date of SUBSTANTIAL COMPLETION. The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of SUBSTANTIAL COMPLETION of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be

necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other WORK that may be made necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Performance BOND shall remain in full force and effect through the guarantee period.

#### 30. ARBITRATION

30.1 All claims, disputes and other matters in question arising out of, or relating to, the CONTRACT DOCUMENTS or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 20, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

30.2 Notice of the demand for arbitration shall be filed in writing with the other party to the CONTRACT DOCUMENTS and with the American Arbitration Association, and a copy shall be filed with the ENGINEER. Demand for arbitration shall in no event be made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.

30.3 The CONTRACTOR will carry on the WORK and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

#### 31. TAXES

31.1 The CONTRACTOR will pay all sales, consumer, use and other similar taxes required by the law of the place where the WORK is performed.

## SUPPLEMENTAL GENERAL CONDITIONS

### LOCATION, SCOPE AND SPECIAL REQUIREMENTS

#### 1. LOCATION OF PROJECT

The Peterson Ditch Streambank Stabilization Design Project No. 94-07-168 is located along Peterson Ditch from Winona Lake to a point approximately 2000 feet south of the intersection of Co. Rd. 225 S. & Packerton Road which is approximately 2.5 miles south of Warsaw in Kosciusko County, Indiana. The project area is located on the Warsaw USGS 7.5' Quadrangle and is within the eastern half of Section 21 and the northeastern quarter of Section 28 of T32N, R6E.

#### 2. SCOPE OF WORK

The intent and purpose of the Specifications and the accompanying Drawings are to describe the work required to complete the Peterson Ditch Streambank Stabilization Project. The scope of the work includes all materials, equipment, incidentals and labor necessary to properly complete the work as specified and to so interconnect the various items and sections of the work as to form a completed and properly coordinated whole. Any material, equipment, incidentals and labor not hereinafter specifically mentioned or shown on the Drawings, which may be found necessary to complete or perfect any portion of the work in a substantial manner and in compliance with the requirements implied or intended in these Specifications or the Drawings, shall be furnished by the CONTRACTOR without additional compensation. The work primarily includes, but is not limited to:

1. Removal of deadfalls and trees only as is necessary to construct the streambank stabilization techniques.
2. Grading of streambanks in preparation of installation of streambank stabilization techniques.
3. Installation of live stakes.
4. Construction of post revetments with wire fencing.
5. Installation of rip rap.
6. Construction of rip rap & geocell slope.
7. Construction of vegetated rock gabion.
8. Construction of live cribwall.
9. Mulched seeding unprotected disturbed areas.

#### 3. DEFINITIONS

The following definitions clarify, supplement and/or amend those provided in the General Conditions.

- A. The term "OWNER" as used throughout these Supplemental General Conditions and Technical Specifications shall mean the Winona Lake Preservation Association.
- B. The term "CONSTRUCTION ENGINEER" as used throughout these Supplemental General Conditions and Technical Specifications shall mean the duly authorized representative of the OWNER.
- C. The term "CONTRACTOR" as used throughout these Supplemental General Conditions and Technical Specifications shall mean the person, firm, or corporation with whom the OWNER has executed the Agreement.
- D. The term "Subcontractor" as used throughout these Supplemental General Conditions and Technical Specifications shall mean a person, firm or corporation having a direct contract with the CONTRACTOR or with any other Subcontractor for the performance of a part of the Work in the Project.
- E. The term "Contract Documents" are hereby defined as the Advertisement for Bids, Information to Bidders, Bid and Bid Bond, Agreement, Payment and Performance Bond, Supplemental General Conditions, General Conditions, Technical Specifications, and all documents that appear in the appendices as contained in this volume and named Contract Documents for Peterson Ditch Streambank Stabilization Design Project No. 94-07-168. The Contract Documents also include plan sheets numbered 1 through 16. The Technical Specifications contain references to various independent, local, State and Federal codes and/or specifications which are also considered as part of the Contract Documents by reference.
- F. The term "Design Drawings", "Drawings" and "Plans" are synonymous and all refer to the set of design drawings entitled "Winona Lake Preservation Association Peterson Ditch Streambank Stabilization".
- G. The term "Project" shall mean any and all obligations, duties and responsibilities necessary for the successful completion of the Peterson Ditch Streambank Stabilization Design Project, Kosciusko County, Indiana, Project No. 94-07-168, assigned or undertaken by the CONTRACTOR under the provisions of these Contract Documents, including all labor, materials, equipment and other incidentals, and the furnishing thereof.
- H. The term "work" as used in these Supplemental General Conditions and in the Technical Specifications, shall refer to all labor necessary to produce the construction required by the Contract Documents, and all materials, equipment and incidentals incorporated or to be incorporated in the Project.
- I. The term "Contract Period" as used in these Supplemental General Conditions and in the Technical Specifications is defined as that time required for completion of the Project in accordance with the Contract Documents.



- J. The term "INDOT Standard Specifications" as used in these Supplemental General Conditions and in the Technical Specifications is defined as the Indiana Department of Transportation Standard Specifications, 1993 edition.

4. CONTRACT DOCUMENTS

- A. In the event of conflicts between the various elements of these Contract Documents, the order of precedence shall be as follows: Addendum, Supplemental General Conditions, Technical Specifications, General Conditions, and Drawings.
- B. The division of the Technical Specifications into sections and/or subdivisions is done for convenience of reference and is not intended to control the CONTRACTOR in dividing work among subcontractors or to limit the scope or type of work performed by any trade.

5. SUBCONTRACTING OF CONTRACT

- A. If the CONTRACTOR intends to subcontract portions of the work, this intent shall be indicated as provided for in the Bid Documents.
- B. After the Award of Contract, the CONTRACTOR shall not modify and/or add additional subcontracting without prior written approval of the OWNER. No subcontracting of the work, or assignment of the contract shall in any case release the CONTRACTOR of his liability under the contract and bond.
- C. The CONTRACTOR shall provide and maintain the proper plant, clerical personnel and field superintendents for proper management and coordination of subcontractors and own forces, as well as for providing and maintaining direct lines of communication between the CONTRACTOR and the OWNER. The CONSTRUCTION ENGINEER shall not be required to deal directly with Subcontractors of the CONTRACTOR. Failure of the CONTRACTOR to provide proper and qualified field management services will be cause for termination of the contract.

6. SUBMISSION OF BIDS

The submission of a bid will be construed as evidence that a site visit and examination have been made, that the Bidder is thoroughly familiar with, understands and agrees to all terms and intent of the Contract Documents, and that any conflicts within the documents or between the documents and other written instructions or verbal statements have been resolved to the satisfaction of the Bidder. Claims for labor, equipment, materials or other costs required due to difficulties which could have been foreseen - had an adequate examination of the site been made, the Contract Documents read thoroughly, and a clarification been sought - will not be recognized.

7. AWARD OF CONTRACT

Award of Contract will be made to the responsive and responsible Bidder based on the total bid

amount. An obvious case of unbalanced bidding will be considered sufficient grounds for rejection of the entire bid.

The OWNER reserves the right to reject any and all bids if it is deemed to be in the best interest of the OWNER.

#### 8. PRECONSTRUCTION CONFERENCE

Following the signing of the Contract Documents and prior to the actual beginning of the construction, a preconstruction conference will be held. Representatives of the CONTRACTOR, including any Subcontractors, the OWNER, the CONSTRUCTION ENGINEER, as well as other interested agencies and parties will be present to discuss the time and sequence of construction, methods and plans of operations, payment and other relevant questions. The time and location of this meeting will be the responsibility of the CONSTRUCTION ENGINEER in consultation with the other parties.

#### 9. SCHEDULE OF CONSTRUCTION

The CONTRACTOR shall submit, at the preconstruction conference, a schedule of construction for approval by the CONSTRUCTION ENGINEER. Progress schedule shall indicate the estimated periods during which the CONTRACTOR will be actively working on various portions of the Project to assure completion on schedule.

#### 10. COMPLETION OF WORK

The CONTRACTOR shall begin work within ten (10) days after the date the Contract is executed, or the date of the notification to proceed, whichever occurs first, and shall complete the work within one-hundred-fifty (150) calendar days.

#### 11. INSURANCE

The CONTRACTOR shall maintain the following minimum insurance:

<u>FORM OF INSURANCE</u>	<u>BODILY INJURY LIABILITY</u>	<u>PROPERTY DAMAGE LIABILITY</u>
Contractor's Public Liability	\$1,000,000	\$200,000/\$200,000
Contractor's Protective Liability	\$1,000,000	\$200,000/\$200,000
Automobile Liability (Owned Equipment)	\$1,000,000	\$200,000/\$200,000
Automobile Liability (Non-Owned Equipment)	\$1,000,000	\$200,000/\$200,000
Owner's Protective Liability or Contractual	\$1,000,000 (both)	\$200,000/\$200,000

12. CONTRACT DOCUMENTS

All Contract Documents resulting from the Peterson Ditch Streambank Stabilization Project, Project No. 94-07-168, are the property of the Winona Lake Preservation Association and are public documents.

13. LIQUIDATED DAMAGES

As actual damages for any delay in completion are impossible of determination, the CONTRACTORS and their sureties shall be liable for and shall pay to the OWNER the sum of \$300.00 as fixed, agreed and liquidated damages for each calendar day of delay until the work is completed.

## PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_, hereinafter called Principal,  
(Corporation, Partnership or Individual)

and \_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto \_\_\_\_\_

\_\_\_\_\_  
(Name of Owner)

\_\_\_\_\_  
(Address of Owner)

hereinafter called OWNER, in the penal sum of \_\_\_\_\_ Dollars, \$ (\_\_\_\_\_)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_\_, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each  
(number)  
one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_  
19 \_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal) Secretary

(SEAL)

\_\_\_\_\_  
Principal

By \_\_\_\_\_ (s)

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

\_\_\_\_\_  
Witness as to Principal

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

\_\_\_\_\_  
Surety

ATTEST:

By \_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

\_\_\_\_\_  
(Address)  
\_\_\_\_\_

NOTE: Date of BOND must not be prior to date of Contract.  
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

## PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a

(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of

Dollars, \$(\_\_\_\_\_)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each  
(Number)

one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_  
19\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal) Secretary

(SEAL)

\_\_\_\_\_  
(Witness as to Principal)

\_\_\_\_\_  
(Address)

ATTEST:

\_\_\_\_\_  
(Surety) Secretary

(SEAL)

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
Principal

By \_\_\_\_\_ (s)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
Surety

By \_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_  
(Address)

NOTE: Date of BOND must not be prior to date of Contract.

If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

## NOTICE OF AWARD

To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PROJECT Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated \_\_\_\_\_, 19\_\_\_\_\_, and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$\_\_\_\_\_.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_.

\_\_\_\_\_  
Owner

By \_\_\_\_\_

Title \_\_\_\_\_

### ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

by \_\_\_\_\_

this the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_



## NOTICE TO PROCEED

To: \_\_\_\_\_ Date: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ Project: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

You are hereby notified to commence WORK in accordance with the Agreement dated \_\_\_\_\_, 19\_\_\_\_\_, on or before \_\_\_\_\_, 19\_\_\_\_\_, and you are to complete the WORK within \_\_\_\_\_ consecutive calendar days thereafter. The date of completion of all WORK is therefore \_\_\_\_\_, 19\_\_\_\_\_.

\_\_\_\_\_  
Owner  
By \_\_\_\_\_  
Title \_\_\_\_\_

### ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by \_\_\_\_\_

\_\_\_\_\_,  
this the \_\_\_\_\_ day  
of \_\_\_\_\_, 19\_\_\_\_\_  
\_\_\_\_\_

By \_\_\_\_\_  
Title \_\_\_\_\_

## CHANGE ORDER

Order No. \_\_\_\_\_

Date: \_\_\_\_\_

Agreement Date: \_\_\_\_\_

NAME OF PROJECT: \_\_\_\_\_

OWNER: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

The following changes are hereby made to the CONTRACT DOCUMENTS:

Justification:

Change to CONTRACT PRICE:

Original CONTRACT PRICE \$ \_\_\_\_\_

Current CONTRACT PRICE adjusted by previous CHANGE ORDER \$ \_\_\_\_\_

The CONTRACT PRICE due to this CHANGE ORDER will be (increased) (decreased)  
by: \$ \_\_\_\_\_

The new CONTRACT PRICE including this CHANGE ORDER will be \$ \_\_\_\_\_

Change to CONTRACT TIME:

The CONTRACT TIME will be (increased) (decreased) by \_\_\_\_\_ calendar days.

The date for completion of all work will be \_\_\_\_\_ (Date).

Approvals Required:

To be effective this Order must be approved by the Federal agency if it changes the scope or objective of the PROJECT, or as may otherwise be required by the SUPPLEMENTAL GENERAL CONDITIONS.

Requested by: \_\_\_\_\_

Recommended by: \_\_\_\_\_

Ordered by: \_\_\_\_\_

Accepted by: \_\_\_\_\_

Federal Agency Approval (where applicable) \_\_\_\_\_

## TECHNICAL SPECIFICATIONS

### TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
I - General Provisions.....	TS-1
II - Mobilization/Demobilization.....	TS-8
III - Earthwork.....	TS-9
IV - Soil Bioengineering Materials.....	TS-12
V - Live Stake Installation.....	TS-14
VI - Post Revetment with Wire Fencing .....	TS-16
VII - Rip-Rap Slope.....	TS-18
VIII - Rip-Rap & Geocell Slope.....	TS-20
IX - Vegetated Rock Gabion.....	TS-23
X - Live Cribwall .....	TS-26
XI- Mulched Seeding .....	TS-28

SECTION I  
TECHNICAL SPECIFICATIONS  
GENERAL PROVISIONS

1.1 SCOPE

This specification sets forth several items of work or conditions which are required as integral parts of the successful completion of the Project.

1.2 CONTRACTOR'S FACILITIES

- 1.2.1 Utilities: The obtaining of all utilities which may be required for the construction shall be the responsibility of the CONTRACTOR.

1.3 PROJECT EXTENT

The CONTRACTOR shall be responsible for satisfying himself as to the construction limits of the Project. The CONTRACTOR shall consult the CONSTRUCTION ENGINEER if questions arise as to the exact location of the construction limits. The CONTRACTOR shall not establish work, storage, or staging areas outside the Project limits, unless otherwise directed or approved by the CONSTRUCTION ENGINEER.

1.4 PROJECT SIGN

If directed by the OWNER, one project sign shall be furnished and erected by the CONTRACTOR. The sign shall be lettered on one side only and conform to the details shown in the Drawings prior to starting construction.

- 1.4.1 Location: The sign shall be erected at the location shown in the Drawings or as directed prior to the starting of construction.
- 1.4.2 Materials: The sign shall be constructed of good sound materials suitable for the purpose. Posts shall be treated soft wood of No. 2 or Standard grade. Sizes shown are nominal. Plywood shall be B-B, exterior grade. Screws shall be of commercial quality, galvanized and of the sizes shown.
- 1.4.3 Painting: The sign and posts shall be given one prime coat and two finish coats of exterior oil paint before lettering. Letters and trim shall be applied to one side only using one coat of enamel of color, style and size shown. Paint shall be of good quality suitable for exterior use.

1.4.4 Maintenance: The sign shall be plumb and backfill of post holes shall be well tamped to properly support the sign in a position plainly visible to the traveling public throughout the life of the contract. The sign shall be kept clean and maintained in good condition until the end of this project.

#### 1.5 PERMITS

The OWNER shall obtain all permits, licenses and easements for permanent structures or permanent changes in existing facilities which may be required by county, state, and federal agencies. This will include, if required, a Construction in a Floodway permit (Indiana Department of Natural Resources), Dredge and Fill Permit (U.S. Army Corps of Engineers) and any county building permits.

The CONTRACTOR shall <sup>CURATOR</sup> obtain all permits and licenses of a temporary nature necessary for the completion of the work. This shall include any burning, haul and access permits or licenses required.

#### 1.6 PROJECT OBSERVATION

Observation of the Project shall be provided by the OWNER. The OWNER and/or his designated representatives shall at all times have ready access to the Project area.

#### 1.7 WORKING HOURS

The CONTRACTOR shall work the hours necessary to complete the project in the allotted time. Work shall not be completed prior to sunrise or after sunset without the approval of the CONSTRUCTION ENGINEER. If work is to be performed on weekends, the CONSTRUCTION ENGINEER shall be notified one week in advance.

#### 1.8 PROTECTION AND SECURITY

Care must be exercised by the CONTRACTOR in all phases of construction to prevent damage and/or injury to the life and property of others. In addition to other provisions of these Contract Documents, the CONTRACTOR shall be responsible for providing adequate security for his work areas, storage areas, equipment, and any other items or areas that he is using. The property owners will not be responsible for any damages attributable to insufficient site security, carelessness, or failure to comply with the provision and intent of these Contract Documents.

#### 1.9 PROTECTION OF EXISTING UTILITIES AND STRUCTURES

The locations, elevations, sizes, and nature of the existing utilities and structures shown in the Drawings are approximate and are based on available information. No responsibility is assumed, therefore, by the owner with respect to the actual conditions encountered.

Care must be exercised in the routing and operating of construction equipment. The

CONTRACTOR must satisfy himself as to the exact locations of utilities and structures within the Project limits. The CONTRACTOR shall protect all utilities and structures within his work area during his construction operations. Any damage to existing utilities and structures resulting from construction operations of this Contract shall be repaired by the CONTRACTOR to the satisfaction of the CONSTRUCTION ENGINEER and owner of the damaged utility and/or structure and at no additional cost to the OWNER.

All utility work shall be in accordance with the applicable codes used by the State of Indiana.

#### 1.10 REPAIR OF DAMAGE

Any damage done by the CONTRACTOR during the term of this contract to structures, fills, roadways, trees, fences, landscape features or any other such feature or property area shall be repaired, replaced in kind or restored to the satisfaction of the CONSTRUCTION ENGINEER and OWNER at the CONTRACTOR'S expense before final payment is made.

#### 1.11 CLEAN UP

After all construction work is complete and prior to final observation, all exposed areas shall be cleaned and left in a sightly condition. All unused materials shall be removed and disposed of properly. Any unprotected disturbed areas shall be mulched and seeded in accordance with Section XI of these Technical Specifications.

The cleanup shall also include the removal of any trash and debris deposited during the contract period. The trash and debris shall be disposed of by removal to an approved landfill. The Project site and adjacent premises will be left in a condition satisfactory to the OWNER.

#### 1.12 PROFILES AND TOPOGRAPHY

Profiles, topography, and details for the work are schematic in nature and, with the exception of dimensioned construction details, are presented only for the purpose of conveying the concept and limit of specified work. Existing contour lines on Drawings were established from a field survey. It is believed that the mapping has been performed with a degree of accuracy sufficient to meet the design criteria. The CONTRACTOR shall verify all details in the field prior to bid and shall have taken this fact into account when estimating the work required. The misuse of noted information for other than that indicated and subsequent suffering of damages as a result of misuse shall not be cause for any claim by the CONTRACTOR. Information is believed to be reasonably correct, but is not guaranteed.

Contour lines are shown to indicate stream and streambank conditions as well as slopes and shapes of area outside of the streambanks. Lines and grades may be field altered to some extent in the course of installing or constructing the techniques specified provided the desired drainage pattern is maintained.

### 1.13 INSTALLATION REQUIREMENTS

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as suggested by the respective manufacturers, unless otherwise specified herein or directed by the CONSTRUCTION ENGINEER.

### 1.14 PROOF OF COMPLIANCE

Whenever the Contract Documents require that a product be in accordance with Federal Specifications, ASTM designations, ANSI specifications, or other association standards, the CONTRACTOR shall present a certification from the manufacturer that the product complies therewith. A Certificate of Compliance is a notarized statement by the manufacturer or supplier, signed by a principal of either, to the effect that the item covered by the Certificate conforms to the Contract Documents, the Project name and location, and the quantity and date or dates of shipment or delivery to which the Certificates apply. When requested or specified, the CONTRACTOR shall submit supporting test data to substantiate compliance. The CONTRACTOR shall include the requirements of specified Certificates as part of purchase orders issued to his supplier. Timely submission and approval of Certificates of Compliance will prevent delays caused by material rejection. Certificates shall be submitted in three copies. All material incorporated into the work shall be approved on the basis of a Certificate of Compliance submitted to the CONSTRUCTION ENGINEER before the material is incorporated into the work.

### 1.15 MAINTAINING STREAM FLOW

If it is necessary for the CONTRACTOR to block the flow of any section of the ditch within the construction limits to complete work, an alternative flow channel or pumping system shall be provided in a manner not to inhibit the normal flow of the ditch. If an alternative flow channel is provided, it shall be removed prior to the completion of the work.

### 1.16 DUST CONTROL

The CONTRACTOR shall be responsible for minimizing the generation of dust outside of the Project limits. The CONTRACTOR shall be required to maintain all excavations, embankments, stockpiles, plant sites, waste areas, and all other work areas within the Project boundaries free from dust which would cause a hazard or nuisance to others. Approved temporary methods of stabilization may consist of sprinkling, chemical treatment, light bituminous treatment or any other similar method permitted by the CONSTRUCTION ENGINEER to control dust. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

### 1.17 SEDIMENT CONTROL

The CONTRACTOR will be responsible for control of siltation and erosion from the Project within the construction limits of the Project site. Control shall include all necessary measures to minimize the deposition of materials in downstream areas and in the adjacent reservoirs.

The CONTRACTOR shall attempt to schedule construction activities so that the amount of exposed soil is minimized. This is to be accomplished by disturbing only those areas which are to be worked immediately and by revegetating or otherwise protecting each area as soon as practical.

If construction is completed prior to the allowable mulched seeding dates, the CONTRACTOR will be responsible for the control of siltation and erosion in disturbed areas within the construction limits shown in the Drawings.

#### 1.18 BURNING

The CONTRACTOR shall inform all employed personnel of the strict rules and regulations governing the burning of combustibles, and shall take every precaution that accidental fires are not started. The CONTRACTOR shall obtain a burning permit from the proper authorities prior to any burning.

Open burning of any type of material will be accomplished in strict accordance with the following rules and precautions, and then only with the approval and under the direction of the CONSTRUCTION ENGINEER.

The CONSTRUCTION ENGINEER'S permission to burn and/or his presence at the site shall not be construed as relieving the CONTRACTOR of any responsibility in the event damage occurs or a citizen's complaint arises. The OWNER accepts no responsibility for damage or costs associated with burning operations.

1.18.1 Precautions: The CONTRACTOR will adhere to the following list of precautions to help reduce the potential of forest fires.

- (01) Burn only WHEN THE WINDS ARE CALM and there is no chance of gusts.
- (02) Burn ONLY ON LEVEL GROUND. On slopes and in gullies, a fire can escape more easily and make a fast run uphill.
- (03) When burning trash, use a BARREL or DEEP PIT with a screen over the top.
- (04) CLEAR the AREA ten feet around where the fire will be. This creates a fire break. If possible, also plow around the area where the fire will be.
- (05) Make sure THE AREA OVERHEAD IS CLEAR of material that could burn.
- (06) HAVE TOOLS HANDY: buckets of water, rakes, hoes, shovels, wet sacks, etc. These items can be used to keep the flames inside the cleared area, subdue the flames if the wind picks up or the fire grows too big, to smother the fire, or put a control line around it if it is getting out of hand. (More sophisticated equipment



may be required by the CONSTRUCTION ENGINEER.)

- (07) Have more than one person to watch the fire. Be sure THE FIRE IS ATTENDED at all times by responsible people.
- (08) Watch for SPOT FIRES. Cinders and sparks can carry through the air and ignite material outside the burn area.
- (09) FEED THE FIRE SLOWLY. Do not burn everything all at once. This will control the level of burning and intensity of the fire.
- (10) Stay with the fire UNTIL THE LAST SPARK IS DEAD. Carefully reinspect the burned area the next morning.
- (11) If your fire escapes out of control, IMMEDIATELY REPORT IT to the local fire department, county dispatcher, or state police. The Indiana Division of Forestry's District Forester may also help if you need to report a forest fire.

1.18.2 Disposal: The CONTRACTOR shall dispose of ash, and unburned or partially burned debris in a neat and safe fashion, as approved by the CONSTRUCTION ENGINEER.

#### 1.19 TEMPORARY SHUTDOWNS

The OWNER desires to complete the Project in the most timely manner. In the event an extended construction "shutdown" is requested by the CONTRACTOR, due to circumstances beyond the CONTRACTOR'S control; the CONTRACTOR will be required to complete all stabilization techniques which have been initiated, as approved by the CONSTRUCTION ENGINEER, protect the areas in accordance with the provisions of these Technical Specifications, and maintain sediment and erosion control during this period. Such work may include the applications of mulch, netting and seeding, as directed by the CONSTRUCTION ENGINEER. The OWNER shall incur no additional costs for such work, nor for the expense of demobilization or remobilization.

#### 1.20 GUARANTEE

The CONTRACTOR shall assume responsibility for all workmanship and materials for a period of one year from completion of the Project. Any work found to be defective shall be replaced at the CONTRACTOR'S expense.

Inasmuch as the establishment of vegetation to control soil erosion is critical on this Project, the CONTRACTOR shall take all necessary measures to prevent and repair any erosion areas or bare areas for a period of one year after the date of final completion. In the event erosion, seed, seedling, and/or vegetative cuttings failure is observed the CONTRACTOR shall be notified in writing and will have a period of thirty (30) days to take measures to stabilize the affected area to the satisfaction of the CONSTRUCTION ENGINEER. The actual area and extent of repair or

prevention shall be at the discretion of the CONSTRUCTION ENGINEER.

#### 1.21 STAKING AND MARKING

The CONTRACTOR will be required to complete all grade staking in those areas where earthwork is required. Grade staking will be at a maximum of 50 feet apart at each section. The areas within the project limits where grade staking is required are indicated in the Drawings. The CONSTRUCTION ENGINEER will be responsible for marking the baseline and maintaining the benchmarks throughout the construction.

The CONSTRUCTION ENGINEER will establish the limits of construction where it is not readily discernible in the field. However, this will not relieve the CONTRACTOR of his responsibility to verify the location, scope and character of the Project as described in these Contract Documents.

#### 1.22 SPECIAL HAZARDS AND PRECAUTIONS

The CONTRACTOR is advised that special hazards exist near water impoundments and reservoirs. The CONTRACTOR'S operations may provide the potential for worsening the existing hazards or creating additional ones. This condition causes great risk to life and property. As a result, the CONTRACTOR shall exercise every precaution in performing each item of work specified in this Contract.

#### 1.23 SITE ACCESS

The CONTRACTOR shall have access to the project site off of roads which cross the ditch as indicated in the Drawings. Access to the sites targeted for techniques will be achieved by using the streambed itself and adjacent corridors within 75 feet of the streambanks as needed. The CONTRACTOR shall use discretion in transporting and hauling materials to the sites to minimize, to the extent possible, negative impacts to the stability of the ditch and vegetation adjacent to it. Access corridors shall be maintained in a manner equal to pre-construction conditions as determined by the CONSTRUCTION ENGINEER.

Following completion of the required construction and after acceptance of the required work by the CONSTRUCTION ENGINEER, any access corridors that have been damaged during construction shall be repaired by the CONTRACTOR at his expense and meet the approval of the OWNER.

## SECTION II

### TECHNICAL SPECIFICATIONS

#### MOBILIZATION/DEMobilIZATION

##### 2.1 SCOPE

The work shall consist of furnishing all materials, labor, equipment and incidentals necessary for the mobilization and demobilization of the CONTRACTORS work forces. This work shall consist of the establishment and removal of facilities that are required by these Specifications, General Conditions, State laws, and local regulations. This item shall also include all costs of licenses, overhead, and every cost or charge necessary and incidental to the proposed work. This item includes the cost of required insurance and bonds and any other initial expense required for the start of the work. The clean-up of the Project site will also be performed under this item.

##### 2.2 GENERAL

This specification covers mobilization for work required by the contract at the time of award. If additional mobilization costs are incurred during performance of the contract as a result of changed or added items of work for which the CONTRACTOR is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the items of work changed or added.

Payment of the total lump sum price for Mobilization and Demobilization will constitute full compensation for all labor, materials, equipment, and all other items necessary for and incidental to completion of this element of work. If the CONTRACTOR elects to demobilize and remobilize before completion of the work, no additional payment will be made.

Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the Project, or the purchase costs of operating supplies.

##### 2.3 REQUIRED DOCUMENTATION

No documentation is required.

### SECTION III

#### TECHNICAL SPECIFICATIONS

##### EARTHWORK

###### 3.1 SCOPE

This specification shall consist of furnishing all materials, equipment, incidentals and labor necessary for earthwork at the locations shown on the Drawings. This work will include excavation, movement, placement, compaction, proper utilization or disposal of all materials, and the shaping and finishing of the project areas as shown in the Drawings.

###### 3.2 EXCAVATION CLASSIFICATION

All excavation shall be unclassified. All materials to be excavated, graded, or reshaped shall include all on site material or designated debris which can be moved by equipment normally used in light construction.

###### 3.3 GENERAL

Earthwork shall include excavation to the designated depths and slopes, transporting of removed material from points of removal to points of final use, placement of fill material within the Project limits, and finishing of all areas to the lines and grades shown in the Drawings. Earthwork shall include the selective stockpiling of the topsoil and subsoil as directed by the CONSTRUCTION ENGINEER, for use as a top cover material. The top cover shall be redistributed as directed by the CONSTRUCTION ENGINEER.

Earthwork shall include the shaping and finishing (final grading) to accommodate the installation and construction of the streambank stabilization techniques. The earthwork additionally includes the excavation and transportation of the materials from designated areas to specific sites and the spreading, compaction, and smoothing of these materials.

###### 3.4 LINES AND GRADES

The Drawings include proposed typical cross-sections and contours which establish lines and grades in certain areas. Minor deviations may be allowed provided positive surface drainage is maintained and the finished grade presents a uniform surface suitable for revegetation.

Finish grade will have been established when grading operations present a uniform surface for revegetation. Any proposed deviations from the grades shown on the Drawings shall be submitted by the CONTRACTOR in writing one week in advance of implementation into the project and be subject to the written approval of the CONSTRUCTION ENGINEER.

### 3.5 PLACEMENT AND COMPACTION - MANUALLY

All areas, where fill material is to be placed, shall be constructed to the graded slopes shown on the Plans.

The CONTRACTOR shall maintain and protect all areas, where fill materials are to be placed, in a satisfactory condition at all times until final completion and acceptance of all work under the contract.

- 3.5.1 Preparation: Fill shall not be placed upon a frozen surface nor shall frozen material be incorporated into the fill. The fill shall be maintained at the same level to the extent feasible. Areas to receive fill material of any classification shall be stripped of vegetation and topsoil to a minimum depth of twelve (12) inches prior to the placement of any fill material. Fill areas shall be maintained in a free-draining condition throughout the construction period.
- 3.5.2 Placement of Material: The CONTRACTOR shall place the fill material in horizontal lifts not exceeding six (6) inches before compaction and extending the entire length and width of the fill area or as directed by the CONSTRUCTION ENGINEER.
- 3.5.3 Compaction of Materials: The CONTRACTOR shall be responsible for checking compaction during fill placement, random checks will be conducted by the CONSTRUCTION ENGINEER. The random checks shall be conducted by the CONSTRUCTION ENGINEER following the placement of no more than two lifts. After the lifts are approved by the CONSTRUCTION ENGINEER, placement of material may continue.

A specific soil density for compaction is not required, but all soil placement must receive the CONSTRUCTION ENGINEER's approval. Compaction is to be accomplished by light duty compacting equipment such as a backhoe mounted hydraulic compactor or hand tampers. The CONSTRUCTION ENGINEER, if deemed necessary, may increase or decrease the thickness of lifts, and/or the number of passes by equipment during the construction of the fill.

### 3.6 CONSTRUCTION TOLERANCES

The CONTRACTOR shall make every reasonable effort to construct the Project uniformly. Tolerances which will be allowed, before reworking of the constructed item is required, are as follows: 1) All areas shall be graded to conform with the slopes shown on the Drawings. 2) No payment will be made for any earthwork performed outside the limits shown on the Drawings unless approved by the CONSTRUCTION ENGINEER. No extra material shall be removed or placed outside these limits without written approval. 3) The design intent is to leave a uniform surface suitable for revegetation in accordance with these Technical Specifications. The nature of the Project does not lend itself to the establishment of numerical standards for permissible

deviation from the Drawings.

### 3.7 CLEARING AND GRUBBING

3.7.1 General: This item is considered incidental to the areas requiring earthwork. Trees, snags, logs, stumps, shrubs and rubbish shall be removed only as is necessary to construct the streambank stabilization techniques in the targeted construction areas shown on the Drawings. Deadfalls within and outside the streambanks are to be removed as is necessary to access the construction areas.

3.7.2 Disposal: All cleared and grubbed material shall be disposed of in a manner acceptable to the CONSTRUCTION ENGINEER and in a manner not detrimental to the inhabitants of the area. If the CONTRACTOR elects to dispose of these materials in a manner other than on site disposal, then the CONTRACTOR will be responsible for determining and complying with local ordinances regarding the disposal method and/or burning of such materials.

### 3.8 REQUIRED DOCUMENTATION

No documentation required.

### 3.9 MEASUREMENT AND PAYMENT

Earthwork required for the project as listed in the scope of this specification shall not be paid directly, but shall be incidental to the installation of the streambank stabilization techniques and shall be included in the various pay items of the contract in accordance with all specifications herein.

## SECTION IV

### TECHNICAL SPECIFICATIONS

#### SOIL BIOENGINEERING MATERIALS

##### 4.1 SCOPE

This work shall consist of the harvesting, transporting, and preparation of living plant materials for use in the bioengineering streambank stabilization techniques.

##### 4.2 MATERIALS

Selected indigenous species shall be harvested from existing stands of living woody vegetation. Live plant materials shall be cut from existing stands found near Peterson Ditch or within practical hauling distance. The source site(s) shall contain plant species that will propagate easily from cuttings. Recommended species include Purpleosier Willow, Black Willow, Pussy Willow, Nine Bark, Redosier Dogwood, Silky Dogwood and Button Bush. Other locally available species which can be propagated by cuttings may also be selected as approved by the Lake & River Enhancement staff of IDNR. Cuttings are to be 1/2 to 2 inches in diameter and will range in length from 2 to 12 feet. Cuttings for live stake installation are to be from 1/2 to 1-1/2 inches in diameter and 2 to 3 feet in length. Cuttings for the vegetated rock gabion and live cribwall are to be 1/2 to 2 inches in diameter and will vary in length from 7 to 12 feet.

##### 4.3 METHODS

Chain saws, bush axes, loppers, and pruners are recommended for cutting living plant materials. Onsite plant material is to be harvested carefully. Based on arrangements made with the owner of the plant material source site, it may be appropriate to clear cut large areas. In other situations, selective cuttings may be required. In these situations, cuts shall be made at a blunt angle, 8 to 10 inches from the ground, to assure that the source sites will regenerate rapidly with healthy vegetation. Remnant materials that are too large for use in soil bioengineering are to be piled for wildlife cover and the site is to be left in a condition that will enhance its potential for regeneration.

Live cuttings are to be bundled together securely at the collection site for easy loading and handling and for protection during transport. Side branches and brushy limbs are to be kept intact. Bundles of live cuttings are to be placed on transport vehicles in an orderly fashion to prevent damage and facilitate handling. Loads shall be covered during transportation to prevent drying and additional stress. Live cuttings shall be delivered to the project site within 8 hours of harvest and installed immediately if the ambient temperature is 50 °F or above. Live cuttings not installed on the day they arrive shall be promptly placed in controlled storage conditions and protected until they are to be installed. Storage is to involve continuous shade, shelter from the wind and protection from drying by heeling into moist soil or storing in uncontaminated water. All live

cuttings are to be removed from storage and installed within 2 days of harvest.

Installation of live cuttings shall begin concurrently with earthwork to reshape targeted areas of the streambank of Peterson Ditch. Soil bioengineering systems are to be installed in the dormant season; between October and March. Given the cold winters typically occurring in Kosciusko County, October and November are preferred installation dates.

Onsite topsoil is to be used as the planting medium for the project. Gravel from the ditch is not suitable material for use as fill around live plant materials. Soil bioengineering systems are to be installed in a planting medium that includes fines and organic material and is capable of supporting plant growth. Muddy soils that are otherwise suitable should not be used until they have been dried to a workable moisture content. Heavy clay soil, if encountered, is to be mixed with organic soils to increase porosity. Select soil backfill does not need to be organic topsoil, however it must be able to support plant growth.

Soil samples of the onsite materials are to be taken prior to installation of live woody cuttings. Nutrient testing by an approved laboratory shall include analyses for a full range of nutrients and pH. Laboratory reports are to include recommended fertilizer and lime amendments for woody plant requirements.

All fill soil around the live vegetative cuttings are to be compacted to densities approximating the surrounding natural soil densities. The soil around plants should be free of voids.

#### 4.4 REQUIRED DOCUMENTATION

No documentation required.

#### 4.5 MEASUREMENT AND PAYMENT

The harvesting, transporting, and preparation of living plant materials required for the project as listed in the scope of this specification shall not be paid directly, but shall be incidental to the installation of the streambank stabilization techniques and shall be included in the various pay items of the contract in accordance with all specifications herein.



## SECTION V

### TECHNICAL SPECIFICATIONS

#### LIVE STAKE INSTALLATION

##### 5.1 SCOPE

This work shall consist of the insertion and tamping of live, rootable vegetative cuttings into the ground. This streambank stabilization measure is to be applied to three sections of the ditch at the dimensions and locations shown on the Drawings. The work shall also consist of furnishing all labor, equipment, incidentals and materials necessary for the satisfactory completion of this item.

##### 5.2 SHAPING

The areas to receive live stake installation shall be shaped to be relatively smooth slopes which are no steeper than 2:1. No vegetation is to be removed unnecessarily.

##### 5.3 MATERIALS

Prior to installation, the live stakes shall be properly prepared. The rootable vegetative cuttings are to be from ½ to 1½ inches in diameter and 2 to 3 feet in length. The materials are to have branches cleanly removed and the bark is to be intact. Basal ends shall be cut at an angle for easy insertion into the soil and tops shall be cut square. Materials which have been harvested more than 2 days prior to installation shall not be used.

##### 5.4 METHODS

Materials shall be installed the same day they are prepared. Live stakes are to be driven into the ground perpendicular to the slope. The installation may be started at any point on the slope face though it is generally easier to start at the top and work down the slope. Live stakes shall be installed 2 to 3 feet apart using triangular spacing. The density of the installation is to range from 2 to 4 stakes per square yard.

The CONTRACTOR is to be attentive that buds on the stakes are oriented up. Four-fifths of the length of the live stake should be installed into the ground and soil firmly packed around it after installation.

A protective cap may be placed over the top of the stake to protect the stake from splitting and deformation. A dead blow hammer shall be used to drive the stake into the ground. In firm soil, the installer may use an iron bar to prepare a pilot hole in which to drive the live stake.

#### 5.5 REQUIRED DOCUMENTATION

No documentation required.

#### 5.6 MEASUREMENT AND PAYMENT

Payment for live stake installation shall be at the Unit Price specified in the Bid Schedule for the quantity installed and will constitute full compensation for materials, labor, equipment, and incidentals to the live stake installation described herein.

## SECTION VI

### TECHNICAL SPECIFICATIONS

#### POST REVETMENT WITH WIRE FENCING

##### 6.1 SCOPE

This work shall consist of furnishing all material, labor, equipment and incidentals necessary for construction of post revetments with wire fencing as shown in the Drawings. This work shall also include bundling and attaching brush to the backside of the revetments. This streambank stabilization measure is to be applied to sixteen (16) sections of the ditch at the dimensions and locations shown on the Drawings.

##### 6.2 GRADING

Areas of the ditch which are to receive post revetment with wire fencing shall be rough graded to be of uniform grade to allow installation of the revetment. As the posts are to be installed in the streambed, vegetation on the streambanks shall not be unnecessarily disturbed.

##### 6.3 MATERIALS

###### 6.3.1 Posts

Posts are to be round wooden fence posts with top diameters ranging from 2-1/2 to 5-1/2 inches and lengths of 7 feet. Posts shall be commercial quality CCA pressure treated posts. Posts treated with creosote shall not be used.

###### 6.3.2 Fencing

Woven wire fencing with Type III galvanized protection shall be used. Fencing shall be of the 9-39-6-12½ type which is 39 inches tall with 9 horizontal cross strands. The fencing has vertical stays at 6 inch spacings. The top and bottom strands are 12½ gauge while all other strands are 11½ gauge.

###### 6.3.3 Staples

Staples are to be 1½ inch galvanized fence staples.

###### 6.3.4 Smooth wire

Smooth wire is to be 14 gauge galvanized wire.

#### 6.4 METHODS

Posts are spaced from 6 to 8 feet on centers in the locations and to the dimensions shown on the Drawings. Posts should have a diameter sufficiently large to permit driving to the required depth. The posts are driven to a depth of approximately one-half length below the point of maximum scour with a hydraulic or pneumatic post driver. Posts are to be installed in an inverted manner with the smallest diameter to the bottom to facilitate driving and firm installation. In areas where the streambed is firm and not subject to appreciable scour, the posts shall be driven to refusal or to a depth of at least one-half the length. The posts are carried to the height required to protect the bank, which is generally the full height of the bank.

Woven wire fencing shall be fastened to the stream side of the post. Wire is to be stretched from post to post to insure taut installation. Each strand of the wire fencing is to be stapled securely to the posts. In areas of the streambed susceptible to scouring, the woven wire is extended horizontally toward the streambed for a distance at least equal to the anticipated depth of scour as indicated in the Drawings. Available stones or concrete rubble or blocks are attached to the bottom strand of the woven wire at regular intervals with smooth wire. The weights are to be installed such that the weights cause the wire to settle in a vertical position along the face of the posts if and when scouring occurs below the point where the wire is attached to the post. Brush and debris are to be placed behind the posts to increase effectiveness. This brush and debris is to be bundled and wired to the driven posts. The locations and reaches of the revetment are as indicated on the Drawings.

#### 6.5 REQUIRED DOCUMENTATION

The CONTRACTOR shall furnish Certificates of Compliance from the manufacturer or supplier of the woven wire and posts in accordance with Article 1.14 of these Technical Specifications.

#### 6.6 MEASUREMENT AND PAYMENT

Payment for post revetment with wire fencing installation shall be at the Unit Price specified in the Bid Schedule for the quantity installed and will constitute full compensation for materials, labor, equipment, and incidentals to the post revetment with wire fencing installation described herein.

## SECTION VII

### TECHNICAL SPECIFICATIONS

#### RIP-RAP SLOPE

##### 7.1 SCOPE

This work shall consist of furnishing all material, labor, equipment and incidentals necessary for rip-rap lining the designated sections of the streambank and inlets to the Ditch as shown in the Drawings. There are eight such sections of streambank and 1 inlet designated for this streambank stabilization technique. All work will be performed in accordance with applicable provisions of these specifications and in reasonable close conformity with the lines, grades, and thicknesses shown in the Drawings.

##### 7.2 SHAPING

Banks on which rip-rap is to be placed are to be sloped so that the pressure of the stone is mainly against the bank rather than against the stone in the lower courses and toe. This slope is to be no steeper than 2:1.

##### 7.3 MATERIALS

Rip-rap used in the construction of these structures shall meet the general requirements as set out in Section 616 of the current IDOH Standard Specifications for twelve (12) inch handlaid rip-rap.

##### 7.4 CONSTRUCTION METHODS

Rip-rap shall be placed at the locations shown on the Drawings. Minimum rip-rap depth is twelve (12) inches for slope stabilization. The toe of the revetment must be firmly established. This is especially critical when the stream bottom is unstable or subject to scour during peak flows. The toe trench shall be extended down to a safe grade and backfilled with heavy rock. In addition to providing protection down to the lowest expected stable grade, additional depth shall be provided to reach a footing that cannot be scoured out by temporary high velocity flows or lose its stability through saturation.

A suitable filter material is to be placed between the rip rap and the streambank. Streambed materials composed of relatively clean sand and gravel are to be used for the filter material. It should seldom, if ever, be necessary to hand place the stones in a revetment. While the revetment may have a somewhat less "finished" look, it is adequate to dump the stones and rearrange them with only a minimum of hand labor. However, dumping on a slope must be done in a manner that will not cause separation of the small and large stones. The finished surface is not to have pockets of finer materials which would flush out and weaken the revetment. Sufficient hand placing shall be performed to provide a keyed surface. In all applications, rip-rap is to extend up the bank to an elevation where vegetation will provide adequate protection.

#### 7.5 REQUIRED DOCUMENTATION

The CONTRACTOR shall furnish Certificates of Compliance from the supplier of the rip-rap in accordance with Article 1.14 of these Technical Specifications. The CONTRACTOR shall also submit to the OWNER all weigh tickets on the quantity of rip-rap used.

#### 7.6 MEASUREMENT AND PAYMENT

Payment for rip-rap slope installation shall be at the Unit Price specified in the Bid Schedule for the quantity installed and will constitute full compensation for materials, labor, equipment, and incidentals to the rip-rap installation described herein.

## SECTION VIII

### TECHNICAL SPECIFICATIONS

#### RIP-RAP AND GEOCELL SLOPE

##### 8.1 SCOPE

Rip-rap is installed on the slope near and below the waterline as in the previous application with attention given to the stabilization of the toe of the slope. This treatment requires less rip-rap to be transported to the site and is generally more visually appealing. Geocell is to be installed in the interval between the rip-rap and the top of the bank. Soil material, from the streambank, is to be placed in the geocell, seeded and mulched, followed by the installation of live stakes. These stakes are to be installed in a manner consistent with the methodology and spacing detailed previously.

This work shall consist of furnishing all material, labor, equipment and incidentals necessary for installation of an erosion control cellular confinement system (Geoweb or equivalent) with rip-rap protection at the toe of the slopes. Cells of the system are to be infilled with soil material and live stakes are to be installed into the streambank through the cells as shown in the Drawings. There are ten (10) sections of the Ditch designated for receiving this streambank stabilization technique. All work will be performed in accordance with applicable provisions of these specifications and in reasonable close conformity with the lines, grades, and thicknesses shown in the Drawings.

##### 8.2 SHAPING

The areas to receive rip-rap and Geocell shall be shaped to be reasonably smooth. Banks on which rip-rap is to be placed are to be sloped so that the pressure of the stone is mainly against the bank rather than against the stone in the lower courses and toe. This slope is to be no steeper than 1 1/2:1.

##### 8.3 MATERIALS

8.3.1 Rip-rap: Rip-rap used in the construction of these structures shall meet the general requirements as set out in Section 616 of the current IDOH Standard Specifications for twelve (12) inch handlaid rip-rap.

8.3.2 Cellular Confinement System or Geocell (Geoweb or equivalent) The geocell used in this streambank stabilization technique shall have the following physical properties:

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
Density	58.4-60.2 lb./ft <sup>3</sup>	ASTM D 1505-85
Carbon Black	1.5-2.0%	By Weight
Sheet Thickness	50 mil (±5%)	ASTM D 374-94
Minimum ESCR*	2,000 hr.	ASTM D 1693-93
Seam Peel Strength	225 lb.	Minimum Cell Seam Strength
Cell Area	36 in <sup>2</sup>	Minimum Cell Area
Cell Height	4 in.	

\* Environmental Stress Crack Resistance

- 8.3.3 J-pins Steel J-pin stakes shall be fabricated from mild steel or reinforcing steel rod. Each stake shall have a minimum-radius, 180 degree return at one end. Rod diameter shall be 0.50 in. Stake length shall be 18 inches.
- 8.3.4 Staples Adjacent sections of geocell are interleafed or abutted together with staples or other suitable fastening units. Staples are to be a minimum of 0.5 inches in length if used.
- 8.3.5 Live stakes Prior to installation, the live stakes shall be properly prepared. The rootable vegetative cuttings are to be from 1/2 to 1 1/2 inches in diameter and 2 to 3 feet in length. The materials are to have branches cleanly removed and the bark is to be intact. Basal ends shall be cut at an angle for easy insertion into the soil and tops shall be cut square. Materials which have been harvested more than 2 days prior to installation shall not be used.

#### 8.4 CONSTRUCTION METHODS

- 8.4.1 Subgrade Preparation The subgrade surfaces of the designated areas shall be shaped and compacted as specified in Section 8.2 and as shown in the Drawings. The areas shall be excavated so that when the geocell sections are installed, the top of the section is flush with or slightly lower than the adjacent terrain or final grade. Remove and replace unstable subgrade with soil material as is required to prepare a relatively smooth, consistent subgrade.
- 8.4.2 Placement and Anchoring of the Geocell The CONTRACTOR will anchor the geocell sections at the crest of the slope. J-pins shall be used to anchor the geocell by driving a J-pin in every other cell along the top securing the hook of the J-pin over the cell wall. This pattern is to be repeated approximately every six feet and at the bottom of the section. Typical geocell are twenty feet in length and sections are to be cut to fit the slope length. Adjacent or abutting sections of geocell are to be stapled according to which sidewall profiles abut. See Drawings for details. The geocell shall be stretched and expanded down the slope instead of across the slope.



8.4.3 Placement of Infill Expanded cells above the waterline are to be infilled with soil material available at the site. Potential displacement of the geocell shall be avoided by infilling from the toe to the crest of the slope. The CONTRACTOR shall limit drop height to a maximum of three feet. The sections shall be overfilled by 1-2 inches with topsoil and lightly tamped or rolled to leave the soil flush with the top edge of the cell walls. Expanded cells below the waterline are to be infilled with streambed material

8.4.4 Rip-rap Toe Rip-rap shall be placed at the toe of the revetment and must be firmly established. This is especially critical when the stream bottom is unstable or subject to scour during peak flows. The toe trench shall be extended down to a safe grade and backfilled with heavy rock. In addition to providing protection down to the lowest expected stable grade, additional depth shall be provided to reach a footing that cannot be scoured out by temporary high velocity flows or lose its stability through saturation. Rip-rap shall be extended up the slope to a point above the waterline or 1 course of cells above the bottom of the geocell whichever is higher.

8.4.5 Live Stake Installation Materials shall be installed the same day they are prepared. Live stakes are to be driven into the ground perpendicular to the slope. The installation may be started at any point on the slope face though it is generally easier to start at the top and work down the slope. Live stakes shall be installed 2 to 3 feet apart using triangular spacing. The density of the installation is to range from 2 to 4 stakes per square yard.

The CONTRACTOR is to be attentive that buds on the stakes are oriented up. Four-fifths of the length of the live stake should be installed into the ground and soil firmly packed around it after installation.

A protective cap may be placed over the top of the stake to protect the stake from splitting and deformation. A dead blow hammer shall be used to drive the stake into the ground. In firm soil, the installer may use an iron bar to prepare a pilot hole in which to drive the live stake.

8.4.6 Mulched seeding Exposed soils in the geocells are to be mulch seeded in accordance with Section XI of these Specifications.

## 8.5 REQUIRED DOCUMENTATION

The CONTRACTOR shall furnish Certificates of Compliance from the supplier of the rip-rap and geocell in accordance with Article 1.14 of these Technical Specifications. The CONTRACTOR shall also submit to the OWNER all weigh tickets on the quantity of rip-rap used.

## 8.6 MEASUREMENT AND PAYMENT

Payment for rip-rap & geocell slope installation shall be at the Unit Price specified in the Bid Schedule for the quantity installed and will constitute full compensation for materials, labor, equipment, and incidentals to the rip-rap & geocell slope installation described herein.

## SECTION IX

### TECHNICAL SPECIFICATIONS

#### VEGETATED ROCK GABIONS

##### 9.1 SCOPE

This work shall consist of furnishing all materials, equipment, incidentals and labor necessary for the installation of a vegetated rock gabion shown in the Drawings. There is one site designated to receive this streambank stabilization technique.

##### 9.2 SHAPING

Starting at the lowest point of the slope, material is to be excavated until a stable foundation is reached to accommodate the three foot wide gabion for the length specified in the Drawings. The bank or backside of the excavation is to be excavated 3 to 6 inches deeper than the front to allow for the gabion to tilt toward the streambank. This will provide additional stability to the structure and ensure that the living branches root well.

##### 9.3 MATERIALS

###### 9.3.1 Gabion baskets

Mesh The mesh shall be hexagonal woven mesh with joints formed by twisting each pair of wires through three half turns. Because of their appearance, the joints are often termed triple twisted. Nominal mesh size is 3¼ by 4½ inches.

Wire Galvanized wire gabion baskets are to conform to Federal Specification QQ-W-461 H, Finish 5, Class 3, and ASTM A-641 and shall have the following properties:

Nominal Lengths	6', 9' or 12'
Nominal Width	3'
Nominal Depth	1.5'
Diaphragm Spacing	3'
Capacity	1, 1.5, or 2 cubic yards
Wire netting diameter	0.118"
Selvages and corner diameter	0.150"
Lacing wire diameter	0.091"
Zinc coating	.80 oz/ft
Tolerance	± 0.004

9.3.2 Rip-rap Rip-rap used in the construction of these structures shall meet the general requirements as set out in Section 616 of the current IDOH Standard Specifications for handlaid rip-rap. Stones shall be 4" to 8" in size.

9.3.3 Live Branches Live vegetative cuttings ranging in length from approximately 7 to 12 feet in length as specified in Section 4.2 of these Specifications shall be used.

#### 9.4 CONSTRUCTION METHODS

9.4.1 Subgrade Preparation The subgrade surfaces of the designated areas shall be shaped and compacted as specified in Section 9.2 and as shown in the Drawings. The areas shall be excavated so that when the gabion baskets are installed, the top of the section is flush with or slightly lower than the adjacent terrain or final grade. Remove and replace unstable subgrade with soil material as is required to prepare a relatively smooth, consistent subgrade.

9.4.2 Gabion Installation Empty gabion baskets are to be placed in line as shown in the Drawings. Lacing wire or other fasteners, approved by the CONSTRUCTION ENGINEER, are to be used to attach each unit to the adjoining one along the vertical reinforced edges or corners and the top. Lacing wire shall be tightly looped around every other mesh opening along the seams in such a manner that single and double loops are alternated. The line of baskets shall be stretched horizontally to achieve better alignment.

The CONTRACTOR shall fill the gabion baskets with rip-rap utilizing available machinery being careful to not damage or crush the sides or diaphragm of the baskets. Every effort shall be made to keep voids and bulges in the gabions to a minimum in order to ensure proper alignment and neat, compact, square appearance. Stones placed on the exposed face of the basket shall be carefully placed.

WHAT ABOVE FILTER  
BELOW GABIONS.

After the filling operation has been completed, the lid shall be bent to meet the front and ends and tightly bound to the rest of the gabion with lacing wire along all edges and top of diaphragms in the same manner use to assemble the gabions.

9.4.3 Live Cuttings Installation Excavated soil material is to be placed behind and over the filled gabion basket. Soil is placed over the basket to create a bedding material for the branches. Live branch cuttings are to be placed on the compacted backfill perpendicular to the slope (using shorter branches), and diagonally across the cribwall in both directions (using longer branches) in such a manner that the leafy end of the branches project out from the face and sides of the cribwall. Approximately 30 branches should be installed per lineal foot of cribwall for each tier. The branches are then covered with soil backfill and compacted. This process is repeated until the top of the section is flush with or slightly lower than the adjacent terrain or final grade. The top of the last section shall be finished with the installation of live cuttings.

#### 9.5 REQUIRED DOCUMENTATION

The CONTRACTOR shall furnish Certificates of Compliance from the supplier of the rip-rap and gabion baskets in accordance with Article 1.14 of these Technical Specifications. The CONTRACTOR shall also submit to the OWNER all weigh tickets on the quantity of rip-rap used.

#### 9.6 MEASUREMENT AND PAYMENT

Payment for vegetated rock gabion installation shall be at the Unit Price specified in the Bid Schedule for the quantity installed and will constitute full compensation for materials, labor, equipment, and incidentals to the vegetated rock gabion installation described herein.

## SECTION X

### TECHNICAL SPECIFICATIONS

#### LIVE CRIBWALL

##### 10.1 SCOPE

This work shall consist of furnishing all materials, equipment, incidentals and labor necessary for the installation of a live cribwall as shown in the Drawings. There is one site designated to receive this streambank stabilization technique.

##### 10.2 SHAPING

Starting at the lowest point of the slope, material is to be excavated until a stable foundation is reached to accommodate the live cribwall specified in the Drawings. The bank or backside of the excavation is to be excavated 3 to 6 inches deeper than the front to allow for the live cribwall to tilt toward the streambank. This will provide additional stability to the structure and ensure that the living branches root well.

##### 10.3 MATERIALS

10.3.1 Timbers Timbers are to be untreated logs or posts. Members are to be seasoned or cured hardwood with diameters ranging from 6" to 12" in lengths as shown in the Drawings. Members are to be sound structurally without signs of decomposition.

10.3.3 Live Branches Live vegetative cuttings ranging in length from approximately 7 to 12 feet in length as specified in Section 4.2 of these Specifications shall be used.

10.3.4 Pinning Cribwall members shall be joined or pinned together with #4 construction grade rebar which is ½" in diameter. Lengths shall vary depending on cribwall member diameters but should range from 12" to 24".

##### 10.4 CONSTRUCTION METHODS

10.4.1 Subgrade Preparation The subgrade surfaces of the designated areas shall be shaped and compacted as specified in Section 10.2 and as shown in the Drawings. Beginning at the lowest point of the slope, excavate loose material until a stable foundation is reached. Excavate the back of the stable foundation (closest to the slope) slightly deeper than the front to add stability to the structure. The areas shall be excavated so that when the live cribwall is installed, the top of the structure is flush with or slightly lower than the adjacent terrain or final grade. Remove and replace unstable subgrade with soil material as is required to prepare a relatively smooth, consistent subgrade.

10.4.2 Cribwall Construction Beginning at the lowest point of the slope, excavate loose material until a stable foundation is reached. Excavate the back of the stable foundation (closest to the slope) slightly deeper than the front to add stability to the structure. The first course of logs is to be placed at the front and back of the excavated foundation approximately 4 to 5 feet apart and parallel to the slope. The next course of logs or timbers is to be placed at right angles (perpendicular to the slope) on top of the previous course to overhang the front and back of the previous course by 3 to 6 inches. These should also be 4 to 5 feet apart. Each course of the live cribwall is placed in the same manner and pinned together with rebar until the structure reaches a point approximately one foot above the ordinary stream elevation. The structure is then to be backfilled with available stone and gravel from the streambed. This material is to be used to prevent backfill from being scoured out of the structure. The stone and gravel backfill is then to be topped with soil and gravel to serve as a rooting medium for the live cuttings. Live branch cuttings are to be placed on the compacted backfill perpendicular to the slope (using shorter branches), and diagonally across the cribwall in both directions (using longer branches) in such a manner that the leafy end of the branches project out from the face and sides of the cribwall. Approximately 30 branches should be installed per lineal foot of cribwall for each tier. The branches are then covered with soil backfill and compacted. The cribwall construction is to be continued in the following sequence:

1. Placement of timbers parallel to the slope at the front and back of the cribwall 4 to 5 feet apart.
2. Placement of timbers perpendicular to the slope 4 to 5 feet apart.
3. Pinning of courses of timbers together and to the previous course with rebar.
4. Backfilling and compacting the course with excavated material.
5. Placement of live branch cuttings on the fill with tops facing the stream. Branches are to be placed perpendicular and diagonal to the slope in crisscross fashion. Cut ends are to be embedded into the slope whenever possible.
6. Follow each layer of branches with a layer of compacted soil to ensure soil contact with the live branch cuttings.
7. Repeat with the next course.

The maximum height of the cribwall is to be 6 feet measured from the lowest course at the foundation. Once the live cribwall is constructed, excavated fill material is to be placed on top and behind the structure to blend it in with slope. The surface is to be planted with erosion control species and mulched.

## 10.5 REQUIRED DOCUMENTATION

No documentation is required.

## 10.6 MEASUREMENT AND PAYMENT

Payment for live cribwall installation shall be at the Unit Price specified in the Bid Schedule for the quantity installed and will constitute full compensation for materials, labor, equipment, and incidentals to the live cribwall installation described herein.

## SECTION XI

### TECHNICAL SPECIFICATIONS

#### MULCHED SEEDING

##### 11.1 SCOPE

This work shall consist of furnishing all labor, equipment, and material for preparing the seedbed, seeding, soil additives and their application, and mulching. All areas disturbed shall be revegetated in accordance with these specifications. Mulched seeding work shall be performed promptly after the streambank stabilization measures have been implemented.

##### 11.2 MATERIALS

- 11.2.1 Fertilizer: The fertilizer shall be commercial fertilizer containing the plant nutrients of nitrogen ( $N_2$ ), available phosphate ( $P_2O_5$ ) and soluble potash ( $K_2O$ ) at the rates specified in Section 11.4. Bagged fertilizer shall display the following information on the bag or on a sticker or tag attached to the bag: Net Weight, Brand and Grade, Guaranteed Analysis, and Name and Address of the Manufacturer.

Bulk fertilizer (dry or liquid) shall be accompanied by a statement from the manufacturer which contains the same information required for the bagged fertilizer.

- 11.2.2 Seed: Seed shall be applied to all disturbed areas in accordance with Section 11.3 with no alterations except by written consent of the CONSTRUCTION ENGINEER. All seed shall be certified by the State Seed Commission, Purdue University.

Seed shall be weed-free containing no noxious seed as listed in I.C. 15-4-1-3 (e) and in 360 I.A.C. 1-1-5 and 360 I.A.C. 1-1-6.

Seed shall be furnished fully tagged and labeled in accordance with the state laws and the U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act in effect on the date of invitations for bids. All seed must be from the latest crop available. No seed will be accepted with a date of tests of more than nine (9) months prior to the date of delivery to the site. Any seed which has become wet, moldy or otherwise damaged in transit or storage will not be accepted. Pre-mixed seed will be acceptable with appropriate certifications.

All seed shall be pure live seed (PLS), determined by multiplying the percent germination of the seed times the percent purity.

- 11.2.3 Mulch: Mulch shall be applied to all seeding areas. The mulch shall consist of wheat or rye straw. The mulch material shall be air dry, reasonably light in color, and shall

not be musty, moldy, caked, or otherwise of low quality. The use of mulch that contains noxious weeds will not be permitted.

- 11.2.4 Seeding Warranty: The CONTRACTOR shall be advised that he is required to establish and maintain for one year the specified stand of grasses. If during the warranty period, it becomes evident that any particular species is absent or weak, the CONTRACTOR shall take all steps necessary to meet the specifications, at no additional cost to the OWNER. The CONTRACTOR shall utilize all measures necessary, including irrigation, to establish this vegetation.

### 11.3 SEED APPLICATION

The permanent seed mixture shall consist of a homogeneous blend of the following species and shall be applied at the following rates:

Creeping Red Fescue	40%
Perennial Ryegrass	20%
Annual Ryegrass	35%
Kentucky Bluegrass	5%

Seed shall be applied at the rate of 3 to 5 pounds per 1,000 square feet.

### 11.4 SEEDBED PREPARATION

Fertilizer shall be applied at the rate of 50 pounds of nitrogen ( $N_2$ ), 100 pounds of phosphorus ( $P_2O_5$ ), and 30 pounds of potash ( $K_2O$ ) per acre. These rates are subject to change depending on the results of the soil tests performed prior to seeding, but these quantities shall be used for bidding purposes. In the event that these quantities increase as a result of the additional soil testing, the CONTRACTOR shall be compensated for the increase by an amount agreed upon with the Owner.

The surface shall be tilled immediately following lime and fertilizer application to a minimum depth of six (6) inches with a tiller, other appropriate tillage equipment, and/or hand tools.

Seedbed preparation shall be suspended when soil conditions are not suitable for the preparation of a satisfactory seedbed.

### 11.5 SEEDING

The specified mixtures of pure live seed (PLS) will be used on all areas disturbed during construction.

All seed shall be broadcast evenly over the area, immediately following tilling, using a broadcast seeder.



#### 11.6 MULCHING

The mulch shall be applied uniformly over all seeded areas until the ground is completely covered and at an average rate of 4000 lb./ac (100 lb./1,000 square feet). Mulching shall immediately follow seeding, unless otherwise noted.

#### 11.7 REQUIRED DOCUMENTATION

The CONTRACTOR shall provide the CONSTRUCTION ENGINEER with a copy of the soil analysis completed on the seeding areas as stated herein. If pre-mixed seed is used, the CONTRACTOR shall provide a copy of the appropriate certification to the CONSTRUCTION ENGINEER. This documentation must be submitted before the work begins. The CONTRACTOR shall also submit to the CONSTRUCTION ENGINEER certifications and weigh tickets on the seed mixture, lime and fertilizer used.

#### 11.8 MEASUREMENT AND PAYMENT

Payment for mulched seeding shall be at the Unit Price specified in the Bid Schedule for the quantity shown and will constitute full compensation for materials, labor, equipment, and incidentals to mulched seeding described herein.